TM 11-277

WAR DEPARTMENT TECHNICAL MANUAL

RADIO SET AN/VRC-1

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WAR DEPARTMENT *17 JUNE 1944*

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[A.G. 300.7 (28 Feb 44).]

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Major General,
The Adjutant General.

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IBn & H 1(2); IC 11 (5).
(For explanation of symbols see FM 21-6.)

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DESTRUCTION NOTICE

WHY — To prevent the enemy from using or salvaging this equipment for his benefit.

WHEN — When ordered by your commander.

HOW — 1. Smash—Use sledges, axes, handaxes, pickaxes, hammers, crowbars, heavy tools.

2. Cut—Use axes, handaxes, machetes.

3. Burn—Use gasoline, kerosene, oil, flame throwers, incendiary grenades.

4. Explosives—Use firearms, grenades, TNT.

5. Disposal—Bury in slit trenches, fox holes, other holes. Throw in streams. Scatter.

USE ANYTHING IMMEDIATELY AVAILABLE FOR DESTRUCTION OF THIS EQUIPMENT.

WHAT — 1. Smash—Cabinet or case, chassis, tubes, tuning capacitors, instrument panel, and every electrical and mechanical part. Rip out all wiring in the units. Destroy nameplates, and circuit labels.

2. Cut—Wire, cables, cords, and covers.

3. Burn—Calibration charts, technical manuals, and other printed matter.

4. Bend—Antenna sections.

5. Bury or scatter—Any or all of the above pieces after demolishing the equipment.

DESTROY EVERYTHING

SAFETY NOTICE

THIS EQUIPMENT USES HIGH VOLTAGES WHICH ARE DANGEROUS AND MAY BE FATAL IF CONTACTED BY OPERATING PERSONNEL.

THE HIGH VOLTAGE POINTS ARE NOT EXPOSED DURING NORMAL OPERATION PROCEDURES. NO TUBE, POWER CABLE, OR COMPONENT UNIT SHOULD BE MOVED FROM ITS NORMAL POSITION WITHOUT FIRST DISCONNECTING THE PRIMARY POWER SOURCE.

DO NOT ADD GASOLINE TO THE VEHICLE WHILE THE SET IS IN OPERATION.

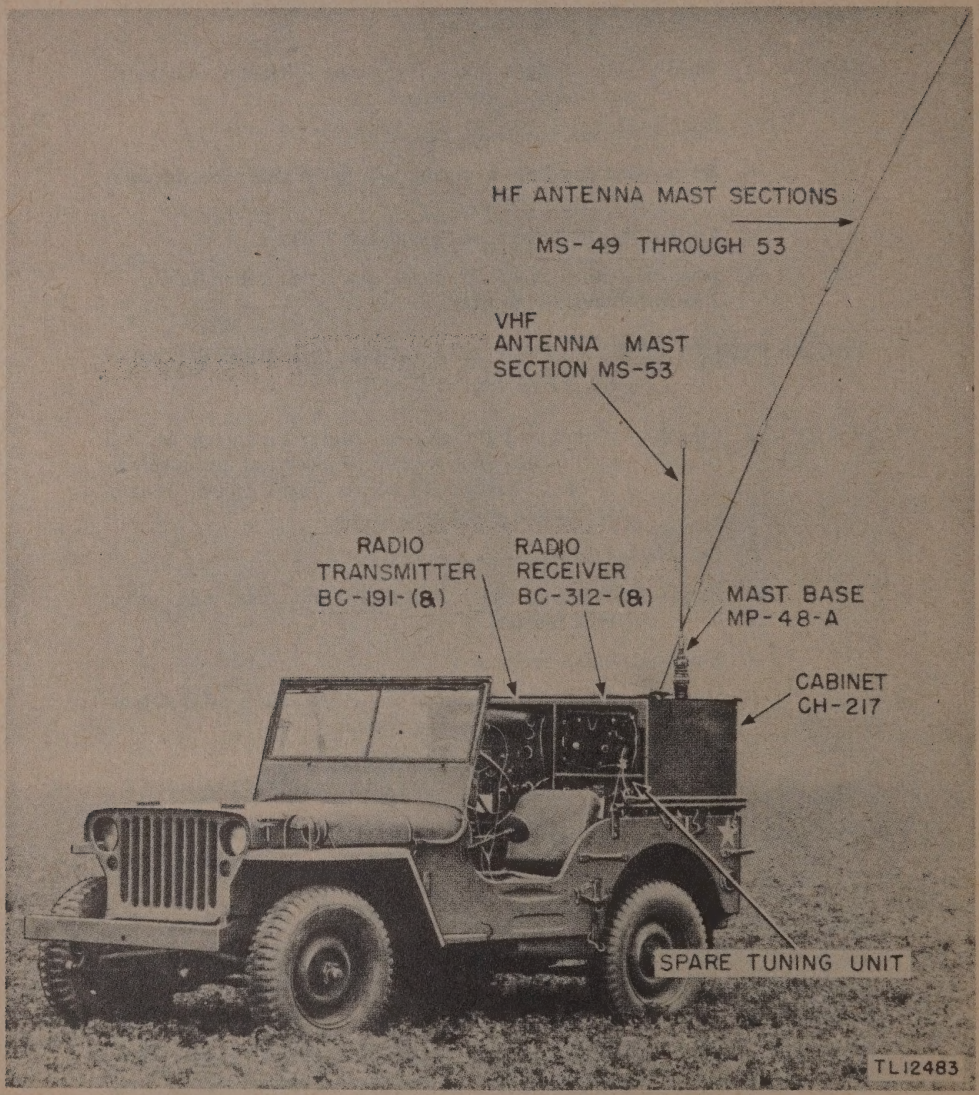

Figure 1. Radio Set AN/VRC-1 on Track ¼-ton 4 x 4, front view.

SECTION I

DESCRIPTION

1. GENERAL.

a. Radio Set AN/VRC-1 is a combination high-frequency and very-high-frequency radio designed for installation in, and operation from, the 12-volt model of Truck, ¼-ton, 4x4. The high-frequency (h-f) section uses Radio Set SCR-193-(&). The very-high-frequency (v-h-f) section uses Radio Set SCR-542-(&). Both sections are mounted in Cabinet CH-217 (fig. 1). Official nomenclature followed by (&) is used to indicate any item of equipment regardless of its model or procurement. Thus Radio Set SCR-193-(&) is used to refer to all such radio sets regardless of model letter.

b. Radio Set AN/VRC-1 is designed for use by Air Forces ground organizations (Army or Marine Corps) in the control of tactical aircraft. The h-f section is normally used for communication within a ground point-to-point net, although use as a beacon for compass-equipped aircraft and for communication with h-f equipped aircraft is also practicable. The v-h-f section is normally used for ground-air communication with aircraft fitted with v-h-f equipment.

c. Detailed information on the components of Radio Set SCR-193-(&) are given in TM 11-800, dated 12 Nov 42, and TM 11-934, dated 11 Sep 43, for Radio Transmitter BC-191-(&), and TM 11-850, dated 15 Mar 44, for Radio Receiver BC-312-(&). Detailed information on the components of Radio Set SCR-542-(&) are given in tentative TM 11-509. Each of the above mentioned manuals is packed with its piece of equipment.

2. PERFORMANCE DATA. The table below lists the performance data and general electrical characteristics of Radio Set AN/VRC-1.

PERFORMANCE DATA

Frequency range	3,000 kc to 156 mc over-all.
H-f section:	
Radio Transmitter BC-191-(&)	3,000 kc to 4,500 kc using TU-6-(&), and 4,500 kc to 6,200 kc using TU-7-(&).
Radio Receiver BC-312-(&)	1,500 kc to 18,000 kc.
V-h-f section:	
Radio Transmitter BC-625-(&)	100 mc to 156 mc.
Radio Receiver BC-624-(&)	100 mc to 156 mc.
Type of modulation	amplitude.
Types of signals that may be transmitted and received:	
H-f section:	
Radio Set SCR-193-(&)	cw, tone, and voice.

PERFORMANCE DATA (Cont'd)

V-h-f section:
Radio Set SCR-542-(&) ..... voice.

Power supply ..... 12-volt vehicular storage battery and dynamotors.

H-f section:
Radio Transmitter BC-191-(&) ..... Dynamotor BD-77-(&): input 12 v, 40 amp; output 1,000 v, 350 ma.

Radio Receiver BC-312-(&) ..... Dynamotor DM-21-(&): input 12 v, 2.7 amp; output 230 v, 82 ma.

V-h-f section:
Radio Set SCR-542-(&) ..... Dynamotor PE-98-(&): input 12 v, 23 amp; output 300 v, 260 ma, 150 v, 10 ma, 13 v, 3.9 amp.

Power output:
H-f section:
Radio Transmitter BC-191-(&) ..... 40 watts to 75 watts.

V-h-f section:
Radio Transmitter BC-625-(&) ..... 8 watts to 9 watts.

Distance range: ..... variable, depending on operating conditions and frequency used.

H-f section:
Radio Set SCR-193-(&) ..... cw, 60 miles approximately.
tone, 40 miles approximately.
voice, 20 miles approximately.

V-h-f section:
Radio Set SCR-542-(&) .....

altitude of airplane	Distance in miles
1,000 feet	30
3,000 "	70
5,000 "	80
10,000 "	120
15,000 "	150
20,000 "	180

Antenna: ..... vertical rod type.

H-f section:
Radio Set SCR-193-(&) ..... Mast Sections MS-49 through MS-53.

V-h-f section:
Radio Set SCR-542-(&) ..... Mast Section MS-53.

3. TABULAR LIST OF COMPONENTS.

H-f section:

Quantity

1 Radio Transmitter BC-191-(&) includes:
- 3 Fuse FU-12-A, 1 in use, 2 running spare.
- 3 Lamp LM-27, 1 in use, 2 running spare.
- 1 Mounting FT-151-B.
- 1 Socket Cap M-164-A.
- 2 Socket Cap M-165-A.
- 2 Technical Manual TM 11-800 for Radio Transmitter BC-191-(&).
- 6 Tube JAN-211 (VT-4-C), 4 in use, 2 spare.
- 2 Tube JAN-10Y (VT-25), 1 in use, 1 spare.
- 4 Wrenches, set screw.
- 1 Transmitter Tuning Unit TU-6-(&).
- 1 Transmitter Tuning Unit TU-7-(&).

1 Mounting FT-172.
1 Mounting FT-178.
1 Radio Receiver BC-312-(&).
1 Technical Manual TM 11-850 for Radio Receiver BC-312-( ).
1 Dynamotor BD-77-(&).
1 Antenna AN-24-A (auxiliary antenna).
1 Antenna A-27 (phantom).
1 Box BX-8 (for transmitter spare tubes).
1 Box BX-19-A (for receiver spare tubes).
1 Box BX-21 (for BX-8 and BX-19-A and other accessories).
1 Case CS-48 (for transmitter tuning units).
1 Mast Base MP-57.
1 Mast Base Bracket MP-63.
2 Mast Section MS-49, 1 in use, 1 spare.
2 Mast Section MS-50, 1 in use, 1 spare.
2 Mast Section MS-51, 1 in use, 1 spare.
2 Mast Section MS-52, 1 in use, 1 spare.
2 Mast Section MS-53, 1 in use, 1 spare.
1 Roll BG-56-A (for mast sections).
1 Terminal Block TM-183.
1 Terminal Box.
2 Clamp MC-421 (for MS-49), 1 in use, 1 spare.
2 Clamp MC-422 (for MS-50), 1 in use, 1 spare.
2 Clamp MC-423 (for MS-51), 1 in use, 1 spare.
2 Clamp MC-424 (for MS-52), 1 in use, 1 spare.

Quantity

1 Cord CD-237.
1 Cord CD-358.
1 Cord CD-411.
1 Cord CD-424.
1 Cord CD-165-A.
1 Cover BG-67-A (for Mast Base MP-57).
1 Cover BG-57-A (for Radio Receiver BC-312-(&)).
1 Cover BG-78-A (for Radio Transmitter BC-191-(&)).
1 Cover BG-79-A (for Dynamotor BD-77-(&)).
3 Insulator IN-86 (two for auxiliary antenna and one for tying down mast sections).
5 Insulator IN-104, 4 in use, 1 spare.
4 Insulator IN-121, 3 in use, 1 spare.

V-h-f section:

1 Radio Transmitter BC-625-(&) includes:
- 3 Tube JAN-832 (VT-118), 2 in use, 1 spare.
- 4 Tube JAN-12A6 (VT-134), 3 in use, 1 spare.
- 2 Tube JAN-6G6 (VT-198-A), 1 in use, 1 spare.
- 3 Tube JAN-6SS7 (VT-199), 2 in use, 1 spare.

2 Crystal Units DC-11-(&) or CR-1(&)/AR, one for each of the following frequencies: 6450.0 kc for operation in the 116.1 mc channel, and 7010.0 kc for operation in the 126.18 mc channel.

1 Radio Receiver BC-624-(&) includes:
- 2 Tube JAN-12J5GT (VT-135), 1 in use, 1 spare.
- 2 Tube JAN-12C8 (VT-169), 1 in use, 1 spare.
- 4 Tube JAN-12G7 (VT-209), 3 in use, 1 spare.
- 2 Tube JAN-9002 (VT-202), 1 in use, 1 spare.
- 4 Tube JAN-9003 (VT-203), 3 in use, 1 spare.
- 2 Tube JAN-12AH7GT (VT-207), 1 in use, 1 spare.

2 Crystal Units DC-11-(&) or CR-1(&)/AR, one for each of the following frequencies: 8007.692 kc for operation in the 116.1 mc channel, and 8155.714 kc for operation in the 126.18 mc channel.

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TABULAR LIST OF COMPONENTS (Cont'd)

1 Dynamotor Unit PE-98-(&) includes:
  8 Brush, l-v input, spare.
  4 Brush, l-v output, spare.
  8 Brush, h-v output, spare.
1 Radio Control Box BC-602-(&).
1 Interphone Control Box BC-606-(&).
1 Junction Box J-33/VRC-1.
1 Mast Base MP-48-A.
2 Mast Section MS-53, 1 in use, 1 spare.
2 ft Cable, coaxial WC-543 or WC-549.
1 Case CS-80-(&).
1 Cord CD-689 (for Mast Base MP-48-A).
1 Cord CX-58/VRC-1.
1 Cord CX-59/VRC-1.
1 Cord CX-60/VRC-1.
1 Cord CX-61/VRC-1.
1 Cord CX-63/VRC-1.
4 ft Cordage CO-213.
1 Cover BG-108 (for Mast Base MP-48-A).
1 Microphone Adapter M-299, includes plug.
1 Mounting Bracket FT-475.
1 Plug PL-173.
1 Rack FT-244-(&).
2 Tentative TM 11-509 for Radio Sets SCR-522-(&) and SCR-542-(&).

Accessories:

3 Headset HS-30-(&).
2 Microphone T-45.
1 Microphone T-17, spare.
2 Microphone Cover M-367, 1 in use, 1 spare.
3 Cord CD-307-A, 2 in use, 1 spare.
3 Cord CD-604, 2 in use, 1 spare.
1 Cord CD-260.
2 Cord CD-318-A (for Microphone T-45).
1 Cabinet CH-217.
50 ft Rope RP-5 (for auxiliary antenna and tying down mast sections).
1 Test Equipment IE-36.
1 Test Set I-139-A.

4. DESCRIPTION OF MAJOR COMPONENTS.

a. H-f Section, Radio Set SCR-193-(&). Radio Set SCR-193-(&) is a high-frequency radio composed of Radio Transmitter BC-191-(&) and Radio Receiver BC-312-(&) mounted in the front portion of Cabinet CH-217 (fig. 3).

(1) Radio Transmitter BC-191-(&) with its associated equipment is designed as a component part of radio sets for use in aircraft, armored cars and other mobile devices, and portable ground stations. It is of medium power output, light weight, and is shock mounted to withstand vibrations. This equipment is capable of transmitting unmodulated continuous-wave (c-w), tone-modulated (m-c-w), and voice-modulated signals. The output power ranges from 40 to 75 watts, and covers a frequency range 3,000 to 4,500 kc using Tuning TU-6-(&), and 4,500 to 6,200 kc using Tuning Unit TU-7-(&). The frequency range may be increased by the use of additional tuning units.

(2) Radio Receiver BC-312-(&) is a multiband, integral-coil, superheterodyne type. This receiver is designed to receive amplitude-modulated (a-m) signals. Provision is made for the reception of c-w, m-c-w, or voice-modulated signals. The circuit also provides reception using either automatic or manual control of volume. The receiver uses two stages of radio-frequency (r-f) amplification, a first detector (mixer) stage, two stages of intermediate-frequency (i-f) amplification, and a separate stage of audio-frequency (a-f) amplification. The receiver also contains a separate h-f oscillator, and a separate c-w oscillator (bfo). It is capable of receiving signals in the frequency range 1,500 to 18,000 kc covered on six bands. Dynamotor DM-21 is secured to the under side of the chassis of the receiver.

(3) Dynamotor Unit BD-77-(&) consists of a dynamotor upon which is mounted a metal relay fuse box. The base of the unit is provided with four snap-slide catches for securing the unit to Mounting FT-107. Sockets and a $1\frac{5}{16}$-inch diameter conduit hole in the left-side panel of the relay fuse box provide for power-input leads. Releasing the four snap-slide catches on the top of the relay fuse box permits removal of the cover and gives access to circuit elements within the box. Refer to paragraph 2 for voltage and current ratings of the dynamotor unit.

b. V-h-f Section, Radio Set SCR-542-(&).

(1) The Radio Set SCR-542-(&) is a very-high-frequency radio set composed of the Radio Transmitter BC-625-(&) and the Radio Receiver BC-624-(&) contained in one case and mounted in the rear portion of the Cabinet CH-217 (fig. 4). This radio set provides transmission or reception of a-m signals on any one

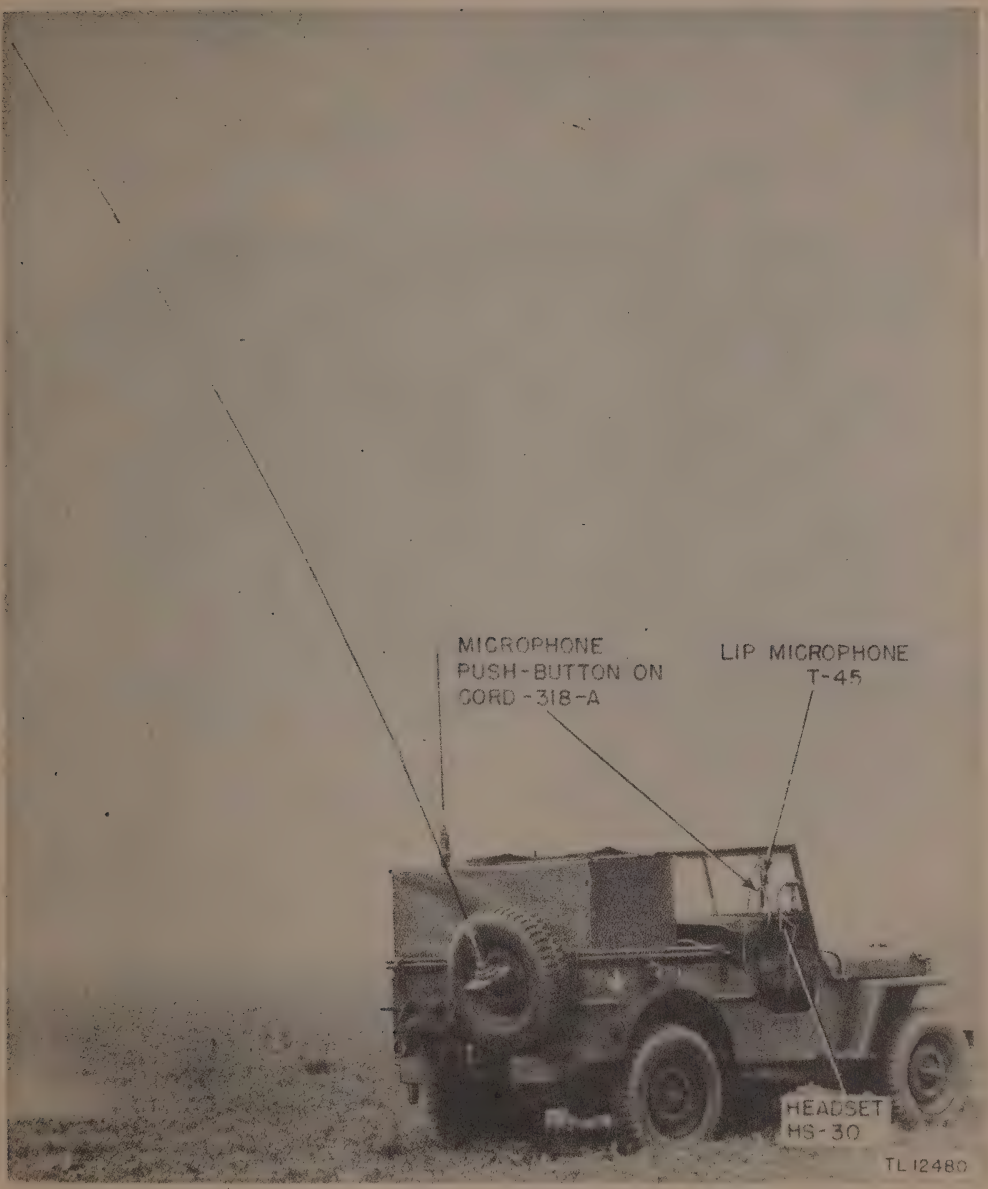

Figure 2. Radio Set AN/VRC-1 on Truck ¼-ton 4 x 4, rear view.

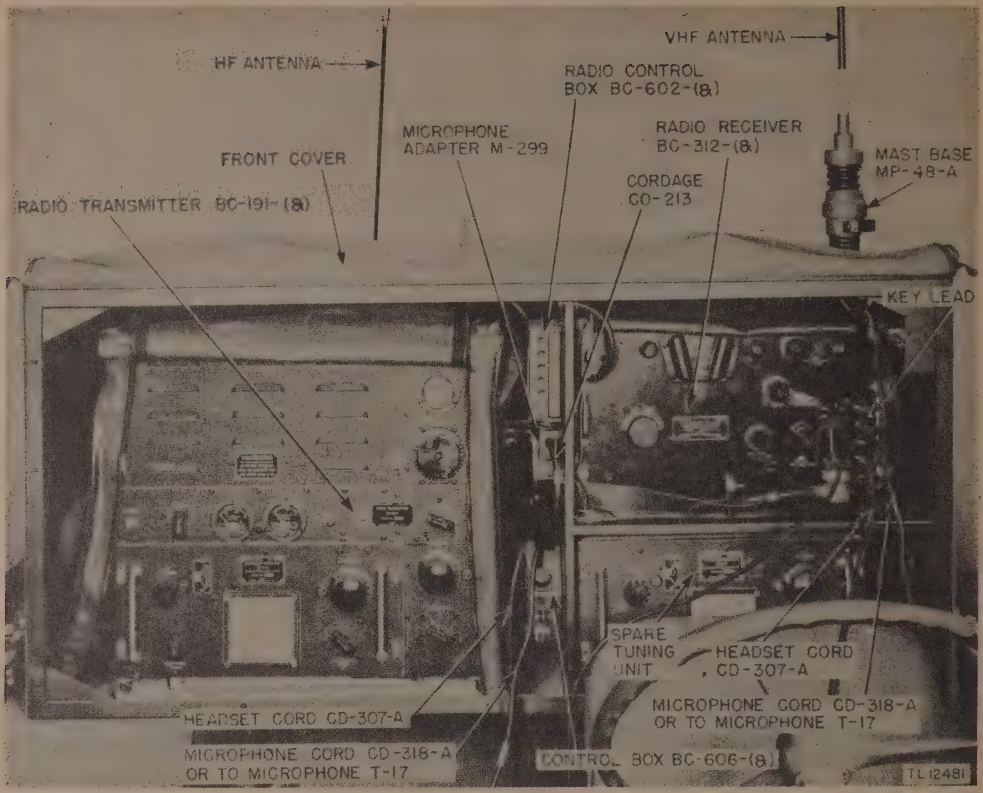

Figure 3. Radio Set SCR-193-(&) installed in Cabinet CH-217.

of four crystal-controlled frequencies within the range 100 to 156 mc. Operation of the transmitter and receiver and the selection of pre-set frequency channels is by remote control only.

(a) Eight Crystal Units DC-11-(&) or CR-1-(&)/AR are required to completely equip one radio set for operation on the four pre-set transmitting frequencies and four pre-set receiving frequencies provided for in the radio set. The set will operate satisfactorily without a complete set of crystal units installed in the radio set. The number of crystal units installed in the transmitter and receiver determine respectively the number of transmitting frequencies and receiving frequencies available for use at any time. One receiver crystal, frequency 8,007.692 kc, and one transmitter crystal, frequency 6,450.0 kc, are furnished for operation on a carrier frequency of 116.10 mc. One receiver crystal, frequency 8,155.714 kc, and one transmitter crystal, frequency 7,010.0 kc, are furnished for operation on a carrier frequency of 126.18 mc.

(b) Additional crystal units for operation on other frequencies may be ordered by specifying the required carrier frequency. The number of crystals to be furnished for each radio set should be specified by the requisitioning agency. Requests for additional crystals should be submitted through channels established by the air forces to the crystal bank of that air force.

(2) Radio Transmitter BC-625-(&) uses a crystal-controlled oscillator and frequency-doubling circuit, two frequency-tripling stages, and a power-amplifying stage. The power-amplifier or output stage is modulated by a push-pull modulator driven by a pentode voice amplifier.

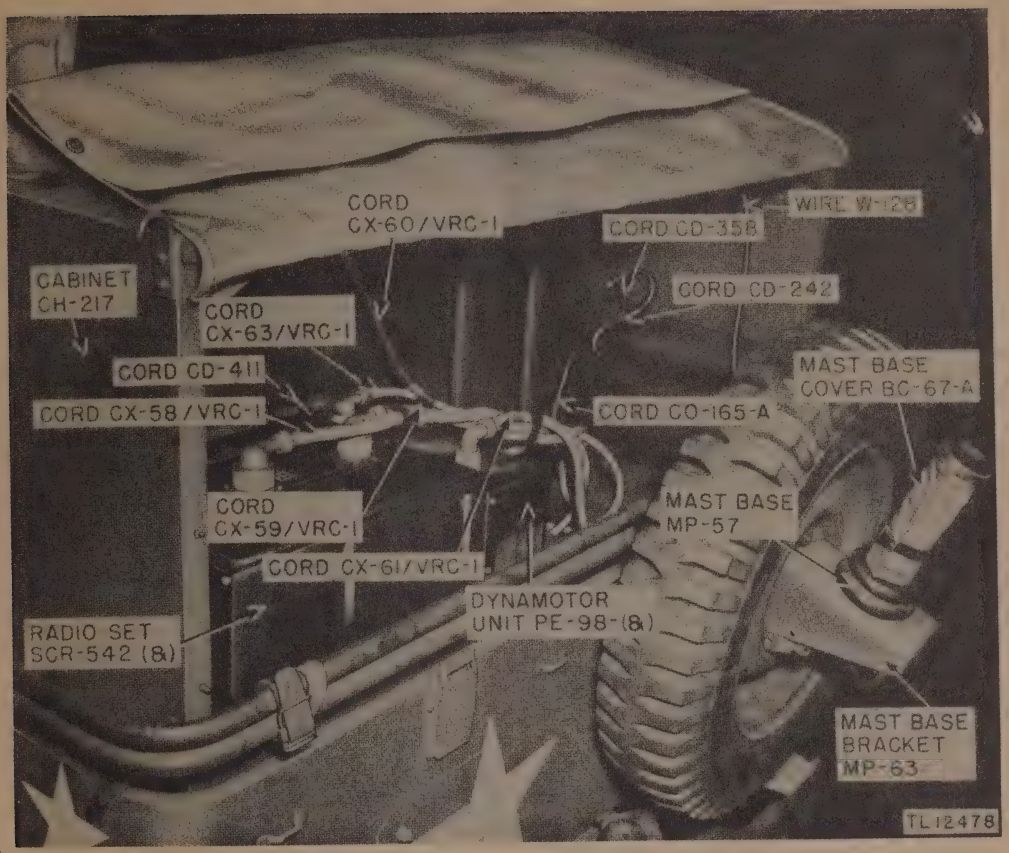

Figure 4. Radio Set SCR-542-(&) installed in Cabinet CH-217.

Only voice communication is available, but continuous audio-tone modulation is also provided. The average power output of the transmitter is 8 to 10 watts.

(3) Radio Receiver BC-624-(&) is a sensitive, 10-tube, superheterodyne using a heterodyne frequency which is an amplified harmonic of a crystal-controlled oscillator. One r-f amplifier, a mixer, three i-f amplifiers, a diode detector, a-v-c rectifier, and two a-f amplifiers are also used. The audio-amplifier portion of the receiver is also used as interphone amplifier and sidetone amplifier. A carrier-operated squelch circuit reduces extraneous receiver noises to a low level and prevents difficulties in interphone communication due to ignition noises.

(4) Dynamotor Unit PE-98-(&) provides all the operating voltages for the Radio Set SCR-542-(&). Three output voltages are provided: 13 volts for the filaments and relays, 150 volts for transmitter bias, and 300 volts for plate and screen supply in the transmitter and the receiver. Regulation is accomplished automatically by varying the speed of the dynamotor to provide voltages of constant value under conditions of varying input and load.

SECTION II

INSTALLATION AND OPERATION

5. CABINET CH-217. Place Cabinet CH-217 in the rear of the vehicle and secure with the four brackets provided, 2 on each end (fig. 5). In order to reduce radio noise interference caused by the vehicle's electrical system, Cabinet CH-217 must be bonded to the vehicle by means of the bonding jumpers provided (one on each end of the cabinet). Drilling detail for the necessary holes is shown in figure 6. For complete installation details, refer to installation drawings accompanying this equipment.

6. MAST BASE MP-48-A. Mast Base MP-48-A is installed through the hole in the mast-base well, provided in the top of Cabinet CH-217. Install Cord CD-689 inside the mast base (fig. 7). Remove screw, item 9, in order to observe that tip of Cord CD-689 engages slot; then replace and tighten screw. Screw adapter coupling, item 15, into bottom of mast base. Remove large nut, lockwasher and flat washer, items 4, 3, and 2 respectively, from bottom of mast base. Place the mast base in the well and replace large washer, lockwasher, and nut. Connect the coaxial cord from Mast Base MP-48-A to Radio Transmitter BC-625-(&).

NOTE: When Mast Section MS-53 is installed in Mast Base MP-48-A and a lower clearance height is desired, the mast section may be held in a horizontal position by pulling the mast section down, flexing the mast base 90°, and engaging the mast section in the hook provided on top center of the Cabinet CH-217 (fig. 8). When vehicle top is used, raise the antenna guard to hold the top away from the v-h-f antenna (fig. 9).

Figure 5. Radio Set AN/VRC-1 with antennas dismantled and protective covers in place.

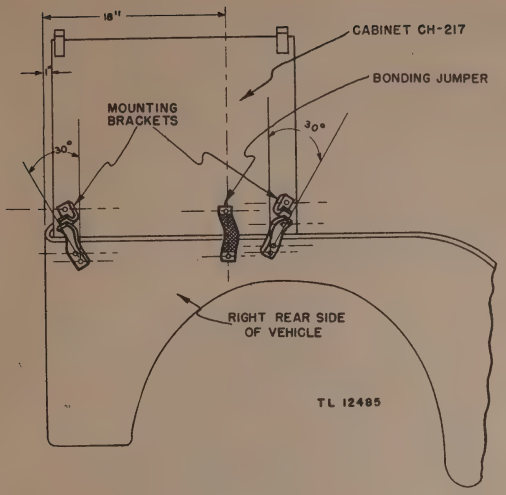

Figure 6. Mounting and drilling details for Radio Set AN/VRC-1.

7. MAST BASE MP-57 AND MAST BASE BRACKET MP-63. Remove the nuts and washers holding the spare wheel on the rear of the vehicle, and using same nuts and washers, secure Mast Base Bracket MP-63 to the spare wheel studs (fig. 8). Mast Base MP-57 is then assembled on the bracket (fig. 10).

8. 12-VOLT CONVERSION KIT. Truck, ¼-ton, 4x4, ordinarily has a 6-volt electrical system, and Radio Set AN/VRC-1 requires 12 volts for operation. The 12-volt conversion kit (Truck, ¼-ton, 4x4) supplied by the Ordnance Department must be installed in the vehicle in order to supply 12 volts for the radio set. Be sure to follow the instructions provided with the conversion kit.

9. H-F SECTION, RADIO SET SCR-193-(&). Detailed operating procedure is given in TM 11-800 for Radio Transmitter BC-191-(&), and in TM 11-850 for Radio Receiver BC-312-(&); therefore only those steps necessary for operation in a tactical net are given in this manual. Control of Radio Transmitter BC-191-(&) is through Radio Receiver BC-312-(&).

a. Insert the microphone and headset plugs into the proper jacks at the right lower end of the receiver front panel (fig. 3). The function of each jack is indicated by the marking on the jack cover.

b. Before tuning, warm up the receiver for about 20 minutes so that frequency drift will not affect tuning accuracy. Set the receiver for manual volume control (mvc) and tune it to the frequency of the net control station with the receiver beat frequency oscillator turned on.

> **NOTE:** During these tuning operations it is assumed that the net control station is transmitting c-w signals. A heterodyne whistle will be heard when the net control station is transmitting. Set receiver volume control at low level and tune carefully for the loudest signal. From this point, do not change any of the settings of the receiver tuning controls.

c. Rotate receiver C.W.-OSC. ADJUST or BEAT FREQ. control slowly. The whistle pitch of the net control station signals will vary from below audibility through a low pitch up to a very high pitch and back to a low pitch and inaudibility once more as the control is turned. Adjust to the point where the heterodyne whistle has dropped in pitch to inaudibility. This is the point of *ZERO BEAT*. If this zero-beat adjustment has been properly made, a slight movement of the C.W.-OSC. ADJUST or BEAT FREQ. control in either direction from the zero beat point should bring in a low-pitched whistle. When this check has been made, reset the control to the zero beat point.

d. Using the calibration chart on the transmitter as a guide, tune transmitter (TONE C.W. VOICE switch set at C.W.) to approximate frequency of receiver.

e. Set receiver SEND-RECEIVE switch to SEND.

f. Set transmitter ANT. COUPLING SWITCH D to position 1 and press TEST KEY. A heterodyne whistle should be heard in the receiver. If no whistle is heard, slowly adjust transmitter control B, M.O. TUNING, keeping control C, P.A. TUNING, in step so that total plate current does not rise above approximately 110 milliamperes. Both controls should be moved about 5 or 10 divisions on either side of their original setting until a heterodyne whistle is picked up in the receiver. When the whistle is picked up, reduce receiver volume control setting to the lowest point at which the signal can still be heard. Then adjust transmitter controls B, M.O. TUNING, and C, P.A. TUNING, until the zero beat point with the transmitter is heard in the receiver headset. Adjust the transmitter P.A. TUNING control for a minimum plate cur-

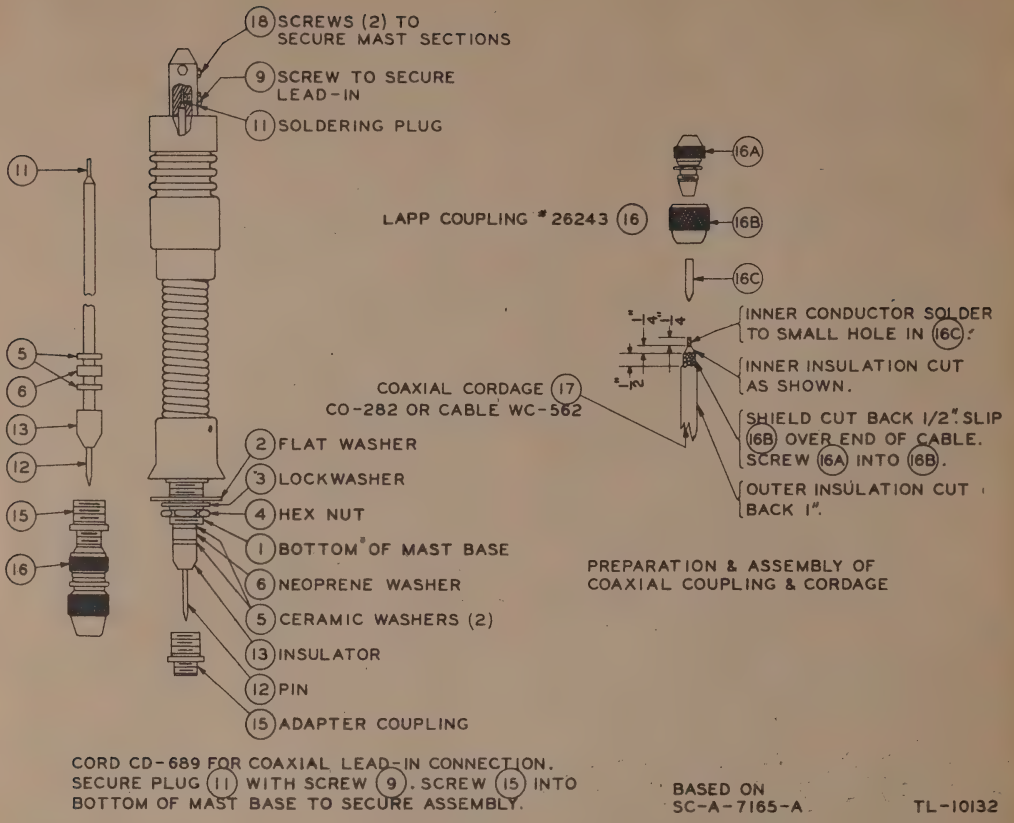
18 SCREWS (2) TO SECURE MAST SECTIONS
9 SCREW TO SECURE LEAD-IN
11 SOLDERING PLUG
11
5
6
13
12
15
16
LAPP COUPLING # 26243 (16)
16A
16B
16C
INNER CONDUCTOR SOLDER TO SMALL HOLE IN (16C).
INNER INSULATION CUT AS SHOWN.
COAXIAL CORDAGE (17) CO-282 OR CABLE WC-562
SHIELD CUT BACK 1/2". SLIP (16B) OVER END OF CABLE. SCREW (16A) INTO (16B).
OUTER INSULATION CUT BACK 1".
2 FLAT WASHER
3 LOCKWASHER
4 HEX NUT
1 BOTTOM OF MAST BASE
6 NEOPRENE WASHER
5 CERAMIC WASHERS (2)
13 INSULATOR
12 PIN
15 ADAPTER COUPLING
PREPARATION & ASSEMBLY OF COAXIAL COUPLING & CORDAGE
CORD CD-689 FOR COAXIAL LEAD-IN CONNECTION. SECURE PLUG (11) WITH SCREW (9). SCREW (15) INTO BOTTOM OF MAST BASE TO SECURE ASSEMBLY.
BASED ON SC-A-7165-A
TL-10132

Figure 7. Details of Mast Base MP-48-A.

rent reading. Do not change the settings of the receiver tuning controls during this operation.

g. Tune the antenna circuits of the transmitter for maximum antenna current as indicated by the ANT CURRENT meter. If this operation changes the transmitter so that it no longer zero beats with the receiver, all transmitter controls should be slightly readjusted until zero beat is again obtained. The transmitter is now tuned to the same frequency as the net control station and the receiver. Lock all transmitter tuning controls.

h. Select the desired type of transmission by means of the TONE C.W. VOICE switch.

i. To transmit, press the microphone switch and speak into the microphone.

j. To receive, release the microphone switch.

10. V-H-F SECTION, RADIO SET SCR-542-(&). Detailed operating procedure is given in tentative TM 11-509 and only those steps necessary for operation in a tactical net are given in this manual. All steps in the procedure below are given with the assumption that the frequency channels have been previously set. All operating controls referred to in the following subparagraphs, with the exception of the microphone switch and the volume control, are located on the panel of Radio Control Box BC-602-A (fig. 11).

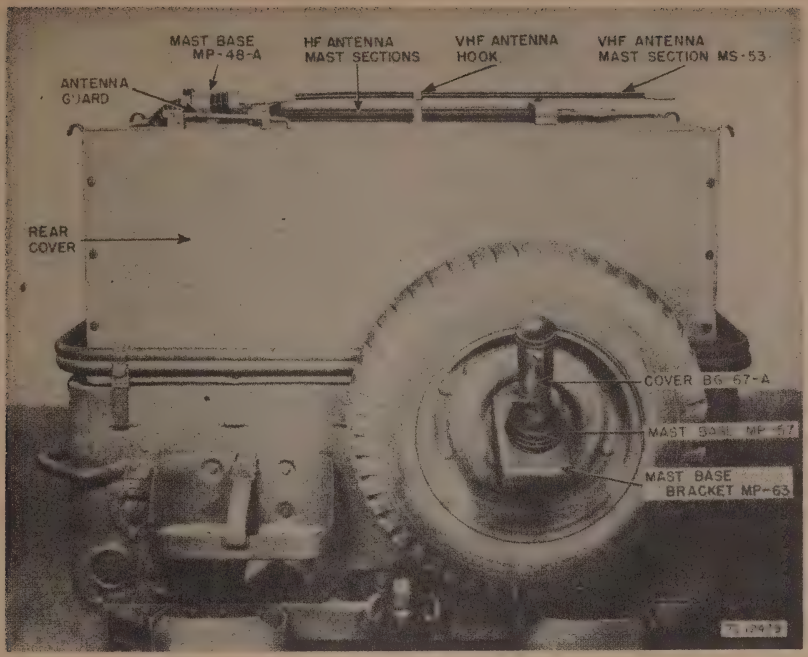

Figure 8. Radio Set AN/VRC-1, rear view, with Mast Base MP-48-A flexed 90° for lower clearance height.

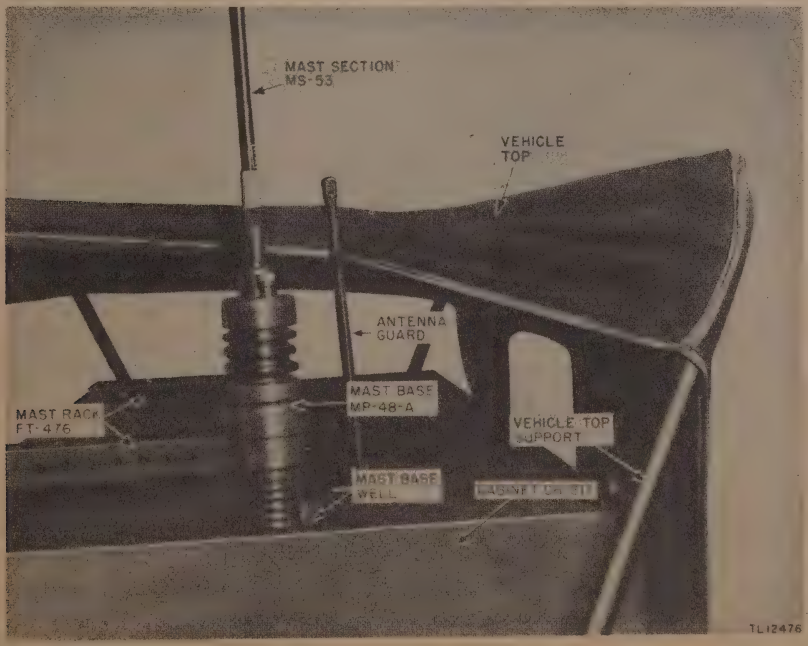

Figure 9. Top of Cabinet CH-217 with antenna guard in position.

a. Cording.

(1) Insert the headset and microphone plugs into their respective jacks on Control Box BC-606-(&) (fig. 11).

(2) Be sure the toggle switch marked INT-RADIO on Control Box BC-606-(&) is set to RADIO position.

b. Transmission.

(1) To start the equipment, press pushbutton A, B, C, or D, depending on which channel is to be used.

(2) Allow approximately one minute for the vacuum tubes to warm up.

(3) Place the T-R-REM. switch in T (transmit) position.

NOTE: The carrier is now on the air.

(4) Press the microphone switch and speak into the microphone.

c. Reception.

(1) Place the T-R-REM. switch in the R (receive) position.

(2) To start the equipment, press pushbutton A, B, C, or D.

(3) Use the control marked VOLUME on Control Box BC-606-(&) to vary the strength of the signal in the headset.

d. Press-to-transmit (press-to-talk) Operation.

(1) Place the T-R-REM. switch in REM (remote) position.

(2) To start the equipment: press pushbutton A, B, C, or D.

(3) To receive: under these conditions the receiver is normally in operation.

(4) To transmit: depress the microphone switch and speak into the microphone.

(5) To receive again: release the microphone switch.

(6) To turn off the equipment: press the OFF pushbutton.

e. Special Notes. If the transmitter and receiver fail to operate when a channel pushbutton is pressed on the radio control box, press another channel pushbutton, then again press the pushbutton for the desired channel. Transmission and reception should now be possible.

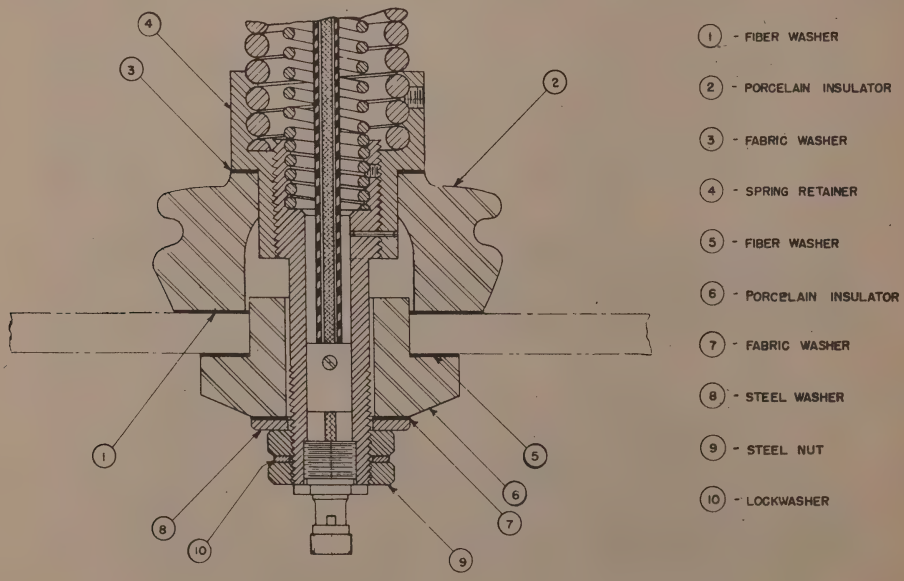

Figure 10. Details of Mast Base MP-57.

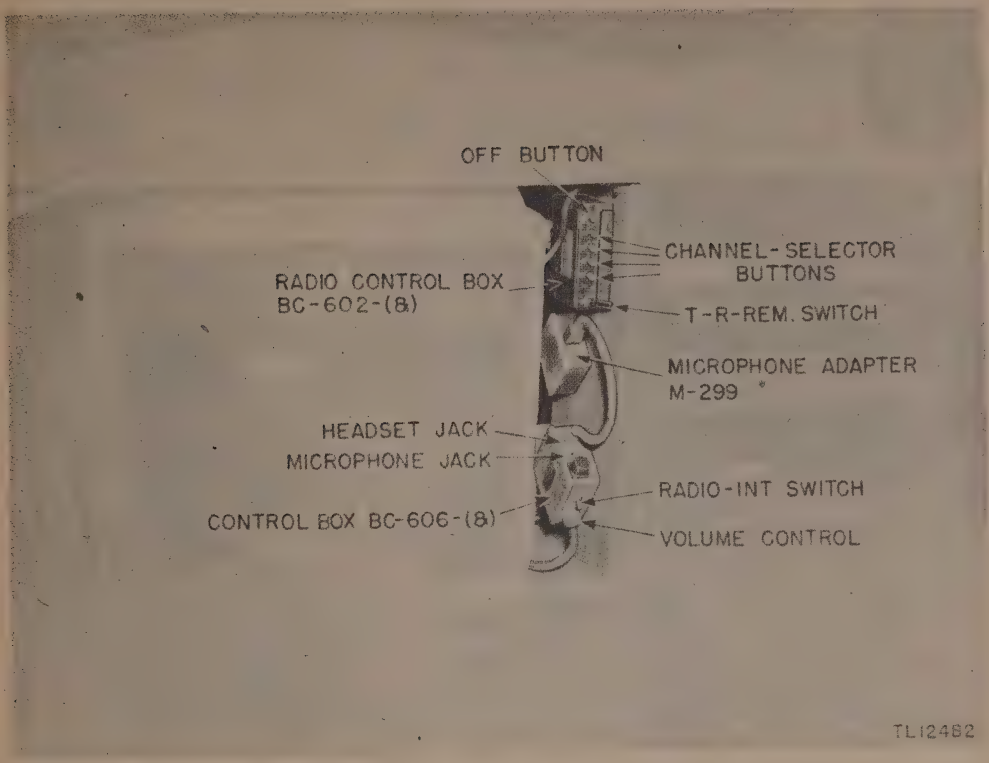

Figure 11. Radio Set SCR-542-(&) operating controls.

SECTION III

FUNCTIONING OF PARTS

11. H-F SECTION, RADIO SET SCR-193-(&).

a. Radio Transmitter BC-191-(&). The transmitter, together with the transmitter tuning units, contains the circuit elements for c-w, tone, and voice transmission. The r-f circuit is of the master-oscillator, power-amplifier type. The a-f circuit consists of a push-pull modulator which is driven by an audio amplifier. The transmitter utilizes one Tube VT-4-C for the oscillator, one Tube VT-4-C for the power amplifier, two Tubes VT-4-C in push-pull for the modulator, and one Tube VT-25 for the audio amplifier (speech amplifier). For c-w transmission, only the master-oscillator, power-amplifier, and speech-amplifier tubes operate. The power-amplifier tube operates class C; the modulator tubes in push-pull operate class B; the audio-amplifier driver tube operates class A. Sufficient a-f power is obtained from the modulator tubes for plate modulation of the power amplifier on tone or voice transmission. Sidetone for monitoring purposes is supplied from the speech amplifier during c-w, tone, and voice transmission.

b. Radio Receiver BC-312-(&). The receiver uses two stages of pentode r-f amplification, a pentagrid mixer, a separate triode h-f oscillator, two stages of pentode i-f amplification, a duplex diode-triode which performs the functions of a diode detector, one stage of a-f amplification, and a separate stage of pentode a-f amplification. A separate triode oscillator is provided to produce a beat note for continuous-wave reception. The antenna circuit of the receiver provides a means of transferring the desired signal to the first r-f stage. The antenna circuit also provides a means of transferring local noise to the first stage, on bands A and B, phased in such a manner that the total noise is materially reduced below that normally picked up by the antenna. The two r-f stages provide selectivity and also act to reduce possible interference from signals occurring at either the intermediate frequency or at the repeat point, or image frequency. The mixer-tube circuit with its associated oscillator adds to the selectivity of the receiver and also changes the frequency of the signal from the frequency received to that at which the i-f amplifier is tuned. The i-f stages provide the major part of the selectivity and gain of the receiver. The second detector stage demodulates the amplified signal to audibility. The a-f stages provide additional amplification. The c-w oscillator, operating at a frequency slightly different from that to which the i-f stages are tuned, provides for an audible beat frequency, adjustable in pitch, when receiving continuous-wave signals.

12. V-H-F SECTION, RADIO SET SCR-542-(&).

a. General. For ground-to-airplane communication in the very-high-frequency range, Radio Set AN/VRC-1 uses Radio Transmitter BC-625-(&) and Radio Receiver BC-624-(&). Pressing one of the channel-selector buttons marked A, B, C, or D on Radio Control Box BC-602-(&) energizes the starting relay in Dynamotor Unit PE-98-(&). When the starting relay is energized, the primary power supply, the 12-volt vehicular storage battery, is connected to the dynamotor. The dynamotor then generates all the operating power used by both the transmitter and the receiver. Filament voltage is supplied to the transmitter and receiver simultaneously, and at all times when the dynamotor is in operation. High voltage is supplied only to that unit (transmitter or receiver) selected for operation by positioning the T-R-REM. switch on Radio Control Box BC-602-(&). When the T-R-REM. switch is in the R (receive) position, energy from the filament voltage supply is applied to the solenoid of Antenna Changeover Relay 412. This relay is located in Case CS-80-(&)M on Rack FT-244-A, near Co-

axial Cable Connector 416. The multiple contacts of the antenna changeover relay are connected so as to function as three ganged switches; one single-pole single-throw switch and two single-pole double-throw switches. With the T-R-REM. switch in the R position, the single-pole single-throw switch lifts the ground from the receiver-input circuit. One of single-pole double-throw switches connects the antenna to the receiver. The other single-pole double-throw switch connects B positive voltage to the receiver's h-f oscillator, and r-f and i-f amplifying tubes. When the T-R-REM. switch is in the T (transmit) position, the solenoid of the antenna changeover relay is de-energized and the multiple contacts performing as switches described above respectively function as follows: ground the receiver antenna input circuit, transfer the antenna from the receiver to the transmitter, and remove B positive voltage from the receiver and apply it to the transmitter.

b. Radio Transmitter BC-625-(&). Radio Transmitter BC-625-(&) is capable of operation on any one of four predetermined crystal-controlled frequency channels between 100 and 156 mc. Pressing one of the channel selector buttons, A, B, C, or D, in addition to causing the dynamotor to run as previously described, causes the operation of a tuning motor. The action of the tuning motor switches the correct crystal to the grid of the oscillator and tunes all the frequency-multiplying and r-f amplifying stages so that the output frequency of the transmitter is the 18th harmonic, or 18 times the crystal frequency. The plate circuit of oscillator Tube VT-198-A selects the 2d harmonic of the crystal and applies it to the grid of the 1st harmonic amplifier Tube VT-134. The plate circuit of the 1st harmonic amplifier Tube VT-134 selects the 3d harmonic of the frequency applied to the grid, or the 6th harmonic of the crystal frequency. The signal is now applied to the push-pull grids of the 2d harmonic amplifier Tube VT-118, the plate circuit of which selects the 3d harmonic of the grid frequency or the 18th harmonic of the crystal frequency. This signal is applied to the grids of the push-pull power-amplifier Tube VT-118 and coupled inductively to the antenna. Two stages of audio amplification provide the necessary audio signal to modulate the carrier. The speech-amplifier Tube VT-199 receives the audio signal from the microphone transformer. The speech-amplifier Tube VT-199 is transformer-coupled to two modulator Tubes VT-134 functioning as class A amplifiers. The audio output from these tubes modulates the plate and screen grid of power-amplifier Tube VT-118.

c. Radio Receiver BC-624-(&). Radio Receiver BC-624-(&) is a 10-tube superheterodyne capable of receiving signals within the frequency range of Radio Transmitter BC-625-(&). This radio receiver varies from a conventional superheterodyne principally in the manner in which the h-f oscillator signal is produced and ultimately mixed with the incoming signal. Tuning of the receiver to one of four predetermined frequency channels occurs simultaneously with the selection of channel A, B, C, or D for transmitter operation. The action of the tuning motor adjusts the various r-f tuned circuits and switches the correct crystal to the grid and the correct inductance to the plate of one section of twin-triode Tube VT-207 used as an oscillator. The inductance in the oscillator plate circuit is permability tuned to the frequency of the crystal with which it is used. The signal produced by the oscillator is capacitively coupled to the grid of harmonic generator Tube VT-202. The harmonic generator tube, operating class C, generates harmonics of the crystal-controlled oscillator frequency. The plate circuit of this tube selects a harmonic between the 11th and 18th harmonic of the crystal frequency. The harmonic frequency thus selected is 12 mc less than the frequency of the incoming signal and is applied to the grid of harmonic amplifier Tube VT-203. The output frequency from the harmonic amplifier, comparable in function to the h-f oscillator output of a conventional superheterodyne, is inductively coupled to the grid circuit of mixer tube VT-203. The 12 mc intermediate frequency is amplified successively through three i-f amplifying stages. A duplex-diode pentode Tube VT-169 functions as detector, a-v-c rectifier, and first audio amplifier. The audio signal is transformer-coupled from the first a-f amplifier to the second a-f amplifier, or output tube. The first and second audio amplifiers are also used as a part of the interphone system. A squelch circuit actuated by the strength of the incoming signal reduces noise in the headset when no signal is being received.

NOTE: Detailed functioning of each part of each component may be found in the technical manual on the particular component.

SECTION IV

MAINTENANCE

UNSATISFACTORY PERFORMANCE OF THIS EQUIPMENT WILL BE REPORTED IMMEDIATELY ON W.D.A.G.O. FORM NO. 468. IF FORM IS NOT AVAILABLE, SEE TM 38-250.

13. GENERAL.

a. To insure uninterrupted service, inspect the various components of Radio Set AN/VRC-1 before and after each day's operation. Make a thorough inspection of each component after every 50 hours of operation. Moisture is probably the most common source of trouble in the operation of field radio sets. All possible care should be exercised to protect the equipment from direct rain and conditions of unusually high humidity. At all times when not in use, the components should be covered.

b. Major repairs will not be attempted by other than experienced and trained personnel. Radio equipment such as is used in the AN/VRC-1 is complex, mechanically as well as electrically, and an inexperienced operator, in attempting to locate and repair trouble which a competent man could do in a few moments, may damage the equipment to such an extent that it will require shipment to a depot for repair.

c. Since special cordage is made up for Radio Set SCR-542-(&), complete cordage data for the v-h-f section is given in paragraph 17.

14. RADIO SET SCR-193-(&).

a. Radio Transmitter BC-191-(&). See section IV of TM 11-800.

b. Radio Receiver BC-312-(&). See section IV of TM 11-850.

c. Dynamotor Unit BC-77-(&). See section IV of TM 11-934.

15. RADIO SET SCR-542-(&). See section IV of tentative TM 11-509.

SECTION V

SUPPLEMENTARY DATA

16. MAINTENANCE PARTS LIST FOR RADIO SET AN/VRC-1. The following table lists the maintenance parts associated with this equipment:

16. MAINTENANCE PARTS LIST FOR RADIO SET AN/VRC-1.

NOTE: Order maintenance parts by stock number, name, and description. Only maintenance parts listed can be requisitioned.

REF SYMBOL	SIGNAL CORPS STOCK NO.	NAME OF PART AND DESCRIPTION	RUNNING SPARES	ORGN STOCK	3D ECH	4TH ECH	5TH ECH	DEPOT STOCK	QUAN PER UNIT
	2A224A	ANTENNA AN-24-A: (Auxiliary antenna)		*	*	*		*	1
	2A275-27	ANTENNA A-27: (Phantom)		*	*	*		*	1
	2Z1108	BOX BX-8: (For transmitter spare tubes)		*	*	*		*	1
	2Z1119A	BOX BX-19-A: (For receiver spare tubes)		*	*	*		*	1
	2Z1121	BOX BX-21: (For Box BX-8, BOX BX-19-A, and accessories)		*	*	*		*	1
	1F543	CABLE WC-543: (Coaxial)		*	*	*		*	2
	3DA10-164	CAPACITOR: 0.01-*uf*		*	*	*		*	2
	2B1848	CASE CS-48: (For transmitter tuning units)		*	*	*		*	1
	2Z2651-421	CLAMP MC-421: (For Mast Section MS-49)		*	*	*	*	*	1
	2Z2651-422	CLAMP MC-422: (For Mast Section MS-50)		*	*	*	*	*	1
	2Z2651-423	CLAMP MC-423: (For Mast Section MS-51)		*	*	*	*	*	1
	2Z2651-424	CLAMP MC-424: (For Mast Section MS-52)		*	*	*	*	*	1
	6Z3147	CONNECTOR AND BOND NUT: Appleton 61007, and BL-50 respectively		*	*	*	*	*	1
	3E1237	CORD CD-237: (Connects Radio Transmitter BC-191-(&) to Dynamotor BD-77-(&))		*	*	*	*	*	1
	3E1307A-5.5	CORD CD-307-A: 65″; (For Headset HS-30)		*	*	*	*	*	2
	3E1358	CORD CD-358: 30″; 6-conductor; (Plug PL-864 and Plug Jacket M-145 on one end, connector on other) (Connects Radio Transmitter BC-191-(&) to terminal box)		*	*	*	*	*	1
	3E1411	CORD CD-411: 66″; 6-conductor; (Plug PL-114 on one end and connector on other) (Connects Radio Receiver BC-312-(&) to terminal box)		*	*	*	*	*	1
	3E1424	CORD CD-424: (Connects Radio Transmitter BC-191-(&) to Dynamotor BD-77-(&))		*	*	*	*	*	1
	3E1472	CORD CD-472: 24″; 1 conductor; (Plug PL-S61 on both ends.) (Connects Radio Transmitter BC-191-(&) to Dynamotor BD-77-(&))		*	*	*	*	*	1
	3E1473	CORD CD-473: 24″; 1 conductor; (Plug PL-S59 on both ends.) (Connects Dynamotor BD-77-(&) to Radio Transmitter BC-191-(&))		*	*	*	*	*	1
	3E1604	CORD CD-604: 6″; 2-conductor (For Headset HS-30)		*	*	*	*	*	2
	3E2165-A	CORD CD-165-A: 18″; 2-conductor; concentric cable (Connects Dynamotor BD-77-(&) to terminal box)		*	*	*	*	*	1
	3E2260	CORD CD-260: 6 ft; 2-conductor; No. 6 concentric cable (Connects terminal box to battery box)		*	*	*	*	*	1
	3E2213	CORDAGE CO-213: 7-conductor; shielded (Connects Control Box BC-606 to connector for Microphone Adapter M-299, and to Junction Box J-33/VRC-1)			*	*	*	*	4 ft
	3E6000-58	CORD CX-58/VRC-1: 44″; 12-conductor; with Amphenol 9733-6 aluminum conduit, Plug PL-Q170, and terminal lugs (Connects Rack FT-244 to Junction Box J-33/VRC-1)		*	*	*	*	*	1

* Indicates stock available.

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16. MAINTENANCE PARTS LIST FOR RADIO SET AN/VRC-1 (CONT'D).

NOTE: Order maintenance parts by stock number, name, and description. Only maintenance parts listed can be requisitioned.

REF SYMBOL	SIGNAL CORPS STOCK NO.	NAME OF PART AND DESCRIPTION	RUNNING SPARES	ORGN STOCK	3D ECH	4TH ECH	5TH ECH	DEPOT STOCK	QUAN PER UNIT
	3E6000-59	CORD CX-59/VRC 1: 40″; 5-conductor; (with 31″ of $^{3}_{8}$ Amphenol 9733 flexible aluminum conduit, Plug PL-Q-169, and terminal lugs) (Connects Rack FT-244 to Junction Box J-33/VRC-1)		*	*	*	*	*	1
	3E6000-60	CORD CX-60/VRC-1: 40″; 12-conductor; (with 31″ of Amphenol 9733 aluminum conduit, Plug PL-Q-169, and terminal lugs) (Connects Junction Box J-33/VRC-1 to Control Box BC-602)		*	*	*	*	*	1
	3E6000-61	CORD CX-61/VRC-1: 30″; 2-conductor; (with 22″ of Amphenol 9733-6 aluminum conduit, Plug PL-Q-172, and terminal lugs) (Connects Dynamotor Unit PE-98-(&) to terminal box)		*	*	*	*	*	1
	3E6000-63	CORD CX-63/VRC-1: 40″; 6-conductor; (with 31″ of Amphenol 9733-6 aluminum conduit, Plug PL-Q-171, and terminal lugs) (Connects Dynamotor Unit PE-98-(&) to Junction Box J-33/VRC-1)		*	*	*	*	*	1
	2Z3367A	COVER BG-67-A: (For Mast Base MP-57)		*	*	*		*	1
	2Z3375-A	COVER BG-75-A: (For Radio Receiver BC-312-(&))		*	*	*		*	1
	2Z3378A	COVER BG-78-A: (For Radio Transmitter BC-191-(&))		*	*	*		*	1
	2Z3379A	COVER BG-79-A: (For Dynamotor BD-77-(&))		*	*	*		*	1
	3Z3400-108	COVER BG-108: (For Mast Base MP-48-A)		*	*	*		*	1
	2X1	CRYSTAL HOLDER CR-1-( )/AR OR DC-11: complete with crystal; (Replacement crystals for organizational needs will be furnished from Air Force Crystal Banks. Always specify frequency desired)		*	*	*			8
	3H1777	DYNAMOTOR BD-77-(&): (Component)		*	*	*		*	1
	3H1898	DYNAMOTOR UNIT PE-98-(&): (Component)		*	*	*		*	1
	3Z2843	FUSE BLOCK: with clips for 1—¼″ x ¼″ fuse; Bussman 4512, or equal		*	*	*		*	1
	3Z1959	FUSE: type 4AG; 40-amp; Littelfuse		*	*	*		*	2
	2B830	HEADSET HS-30-(&): (Component)		*	*	*		*	3
	6D8322	INSTRUCTION BOOK: Tentative TM 11-509 (For Radio Sets SCR-522-(&) and SCR-542-(&))		*	*	*	*	*	2
	6D9807-1	INSTRUCTIONS: installation (For Radio Set AN/VRC-1)		*	*			*	2
	3G586	INSULATOR IN-86		*	*	*		*	3
	3G604	INSULATOR IN-104		*	*	*	*	*	4
	3G621	INSULATOR IN-121		*	*	*	*	*	3
	2C1738	CONTROL BOX BC-606-(&): (Component)		*	*	*		*	1
	2Z5600-33	JUNCTION BOX J-33/VRC-1		*	*			*	1
	3Z3445	KEY J-45		*	*	*	*	*	1
	2A2088-48A	MAST BASE MP-48-A: (Component)		*	*	*	*	*	1
	2A2088-57	MAST BASE MP-57 (Component)		*	*	*	*	*	1
	2A2349	MAST SECTION MS-49		*	*	*	*	*	1
	2A2350	MAST SECTION MS-50		*	*	*	*	*	1
	2A2351	MAST SECTION MS-51		*	*	*	*	*	1
	2A2352	MAST SECTION MS-52		*	*	*	*	*	1

* Indicates stock available.

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16. MAINTENANCE PARTS LIST FOR RADIO SET AN/VRC-1 (CONT'D).

NOTE: Order maintenance parts by stock number, name, and description. Only maintenance parts listed can be requisitioned.

REF SYMBOL	SIGNAL CORPS STOCK NO.	NAME OF PART AND DESCRIPTION	RUNNING SPARES	ORGN STOCK	3D ECH	4TH ECH	5TH ECH	DEPOT STOCK	QUAN PER UNIT
	2A2353	MAST SECTION MS-53		*	*	*	*	*	2
	2B1617	MICROPHONE T-17: (Component)		*	*	*	*	*	2
	2B16145	MICROPHONE T-45: (Component)		*	*	*	*	*	2
	2B1770-299	MICROPHONE ADAPTER M-299		*	*	*	*	*	1
	2Z6712	MOUNTING FT-172: snubber (For BC-191-(&))		*	*	*	*	*	1
	2Z6718	MOUNTING FT-178: snubber (For BC-312-(&)		*	*	*	*	*	1
	2Z7155	PLUG PL-55: 2-conductor			*	*	*	*	1
	2Z164.3	PLUG PL-864: 8-conductor; steel-shell			*	*	*	*	1
	2Z7159.3	PLUG PL-859: 1-conductor; steel-shell			*	*	*	*	1
	2Z7214	PLUG PL-114: 14-conductor; steel-shell			*	*	*	*	1
	2Z7226-169.2	PLUG PL-P169: 12-conductor; straight			*	*	*	*	1
	2Z7226-169.1	PLUG PL-Q169: 12-conductor; right-angle			*	*	*	*	1
	2Z7226-170.1	PLUG PL-Q170: 18-conductor; right-angle			*	*	*	*	1
	2Z7226-171.1	PLUG PL-Q171: 6-conductor; right-angle			*	*	*	*	1
	2Z7226-172.1	PLUG PL-Q172: 2-conductor; right-angle			*	*	*	*	1
	2Z7226-173.2	PLUG PL-P173: 2-conductor; straight			*	*	*	*	1
	2Z7380-244-(&)	RACK FT-244-(&): (Component)		*	*	*	*	*	1
	2C4312	RADIO RECEIVER BC-312-(&): (Component)		*	*	*	*	*	1
	2C4424	RADIO RECEIVER BC-624-(&): (Component)		*	*	*	*	*	1
	2C6525-(&)	RADIO TRANSMITTER BC-625-(&): (Component)		*	*	*	*	*	1
	2C6191-(&)	RADIO TRANSMITTER BC-191-(&): (Component)		*	*	*	*	*	1
	2C3347-(&)	RADIO CONTROL BOX BC-602-(&): (Component)		*	*	*	*	*	1
	2Z8056A	ROLL BG-56-A: (For mast sections)		*	*			*	1
	6Z7926	ROPE RP-5: (For auxiliary antenna and tying down mast sections)		*	*	*		*	50 ft
	2Z8404-4	SHOCKMOUNTS: Lord Mfg., Type 153PH-24		*	*	*	*	*	6
	3F4139	TEST SET I-139		*	*	*	*	*	1
	2C8006	TRANSMITTER TUNING UNIT TU-6-(&): (Component)		*	*	*	*	*	1
	2C8007	TRANSMITTER TUNING UNIT TU-7-(&): (Component)		*	*	*	*	*	1
	1B128	WIRE W-128: 1-conductor		*	*	*		*	15 ft
	3H1894A/B3	BRUSH: dynamotor; input; Bendix B-1080	2		*	*	*	*	8
	3H1894A/B4	BRUSH: dynamotor; low-voltage output; Bendix B-1081	2		*	*	*	*	4
	3H1894A/B5	BRUSH: dynamotor; high-voltage output; Bendix B-1082	2		*	*	*	*	8
	2J832	TUBE JAN832 (VT-118)	4		*	*	*	*	2
	2J12A6	TUBE JAN12A6 (VT-134)	6		*	*	*	*	3
	2J12J5GT	TUBE JAN12J5-GT (VT-135)	2		*	*	*	*	1
	2J12C8	TUBE JAN12C8 (VT-169)	2		*	*	*	*	1
	2J6G6G	TUBE JAN6G6G (VT-198-A)	2		*	*	*	*	1
	2J6SS7	TUBE JAN6SS7 (VT-199)	4		*	*	*	*	2
	2J9002	TUBE JAN9002 (VT-202)	2		*	*	*	*	1
	2J9003	TUBE JAN9003 (VT-203)	6		*	*	*	*	3
	2J12AH7GT	TUBE JAN12AH7GT (VT-207)	2		*	*	*	*	1
	2J12SG7	TUBE JAN12SG7 (VT-209)	6		*	*	*	*	3

* Indicates stock available.

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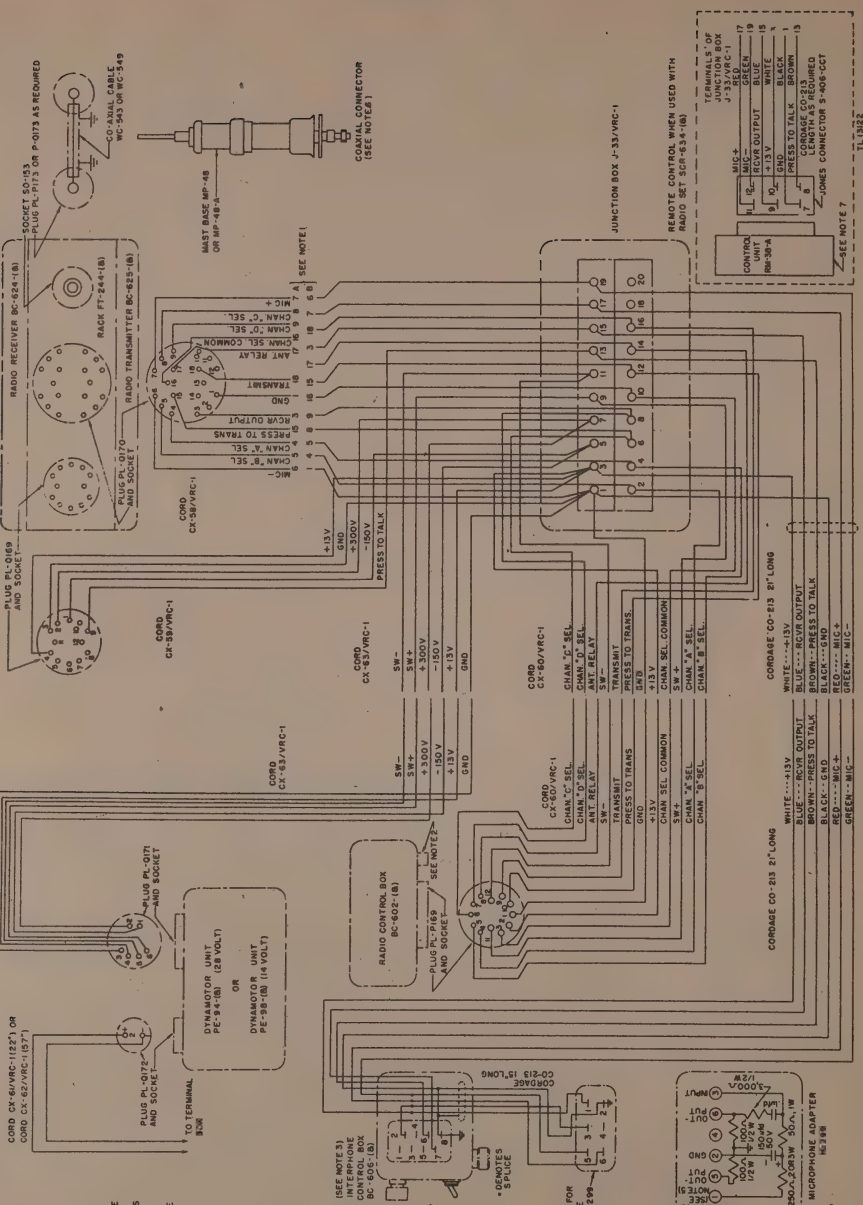

NOTE
1 CORRESPONDING NUMBERS IN CIRCLES AND SQUARES SHOW CONTINUITY OF CORD CONDUCTORS AND ARE FOR REFERENCE ONLY.
2 THIS SOCKET IS FURNISHED ON CONTROL BOX BC-602-(B) BUT IS NOT USED IN V-EHICULAR INSTALLATIONS.
3 ONE MICROPHONE T-17-(B) AND ONE HEADSET HS-30-(B) SHALL BE PLUGGED INTO DESIGNATED JACKS ON CONTROL BOX BC-606-(B).
4 ONE LOUDSPEAKER LS-166/U SHALL BE CONNECTED TO RECEIVER BC-624-(B) SHALL BE CHECKED TO DETERMINE THAT POSITIONS CORRESPOND TO RESISTANCE OF HEADSETS USED:
COMMON-TAP #4 300Ω -TAP #6
50Ω -TAP #5 4,000Ω-TAP #7
5. FOR V-EHICULAR INSTALLATIONS OF SCR-522/542, USING MICROPHONE T-17-(B), SEE PARA. 3(b). 24-VOLT SUPPLY TO TERMINALS OF MICROPHONE ADAPTER M-299 MAY BE SUBSTITUTED FOR BY CONNECTION TO THE +13-VOLT TERMINAL OF DYNAMOTOR. THE 24-VOLT ANTI-LOSS INGAIN MAY BE COMPENSATED FOR BY ADJUSTMENT OF THE MICROPHONE GAIN CONTROL ON TRANSMITTER BC-625-(B).
6 CORD CX-62/VRC-1 (5'7") CABLE TO MAST BASE COUPLING, SEE FIG. 7.
7 CONTROL UNIT RM-38-(B) IS PART OF RADIO SET SCR-634-(B), ONLY. SEE INSTRUCTIONS ISSUED BY SIGNAL CORPS.
(SEE NOTE 3) INTERPHONE CONTROL BOX BC-606-(B)
DENOTES SPLICE
CONNECTOR FOR MICROPHONE ADAPTER M-299
CORD CX-61/VRC-1 (12'1") OR CORD CX-62/VRC-1 (5'7")
PLUG PL-047 AND SOCKET
TO TERMINAL BOX
DYNAMOTOR UNIT PE-94-(B) (28 VOLT) OR DYNAMOTOR UNIT PE-98-(B) (14 VOLT)
PLUG PL-047 AND SOCKET
RADIO CONTROL BOX BC-602-(B)
PLUG PL-169 AND SOCKET
SEE NOTE 2
CORD CX-483/VRC-1
CORD CX-59/VRC-1
CORD CX-60/VRC-1
CORD CX-58/VRC-1
PLUG PL-069 AND SOCKET
PLUG PL-070 AND SOCKET
RADIO RECEIVER BC-624-(B)
RADIO TRANSMITTER BC-625-(B)
SOCKET SO-153
PLUG PL-173 OR P-0173 AS REQUIRED
RACK FT-2644-(B)
CO-AXIAL CABLE WC-543 OR WC-549
MAST BASE MP-48 OR MP-48-A
COAXIAL CONNECTOR (SEE NOTE 6)
SEE NOTE 6
SEE NOTE 7
JUNCTION BOX J-33/VRC-1
REMOTE CONTROL WHEN USED WITH RADIO SET SCR-634-(B)
CONTROL UNIT RM-38-A
TERMINALS OF JUNCTION BOX J-33/VRC-1
MIC+
MIC-
RCVR OUTPUT
+13V
GND
PRESS TO TALK
RED
GREEN
BLUE
WHITE
BLACK
BROWN
CORDAGE CO-213 15'LONG
CORDAGE CO-213 2'LONG
CORDAGE CO-213 20'LONG
CONNECTOR JONES S-406-CCT
LENGTH AS REQUIRED
BASED ON DC-DP 8604-D
MICROPHONE ADAPTER M-299
INPUT
OUTPUT
24-VOLT
GND
100Ω 1/2W
250Ω,20W
50Ω,1W
5,000Ω 1/2W

Figure 12. Cording diagram for v-h-f component of Radio Set AN/VRC-1.

17. CORDAGE DATA. The following diagrams and pictures give detailed cording data for Radio Set AN/VRC-1. See figures 12 through 19.

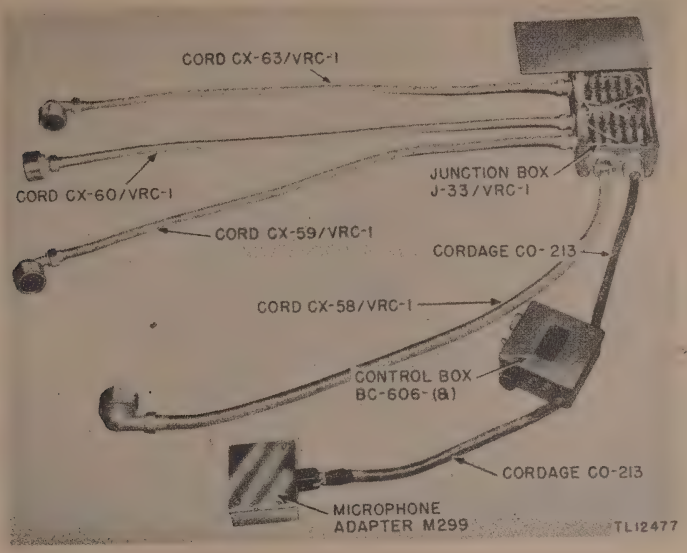


Figure 13. Cording to Junction Box J-33/VRC-1.

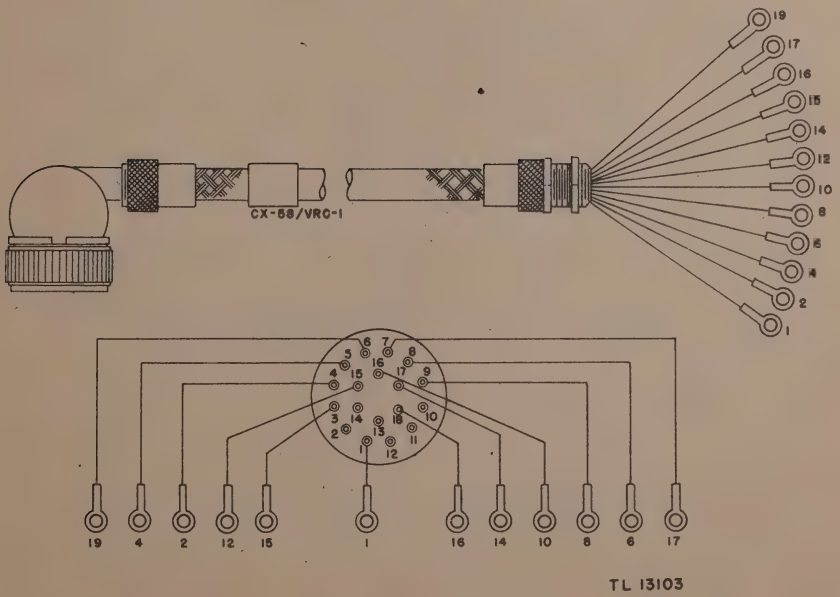


Figure 14. Cord CX-58/VRC-1.

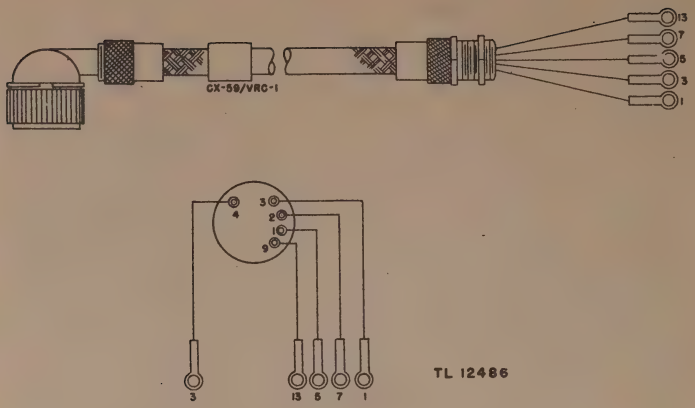


Figure 15. Cord CX-59/VRC-1.

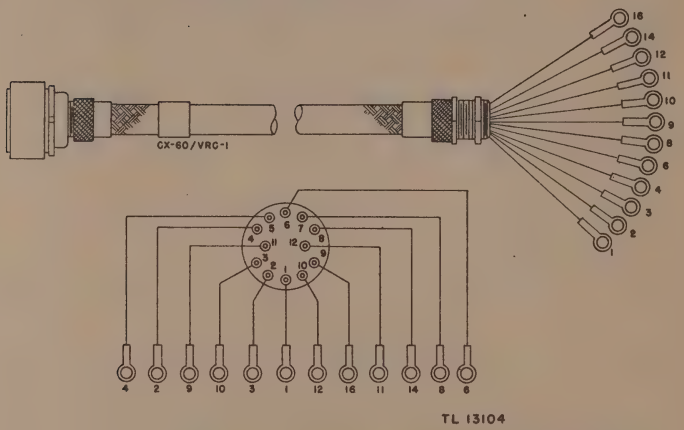


Figure 16. Cord CX-60/VRC-1.

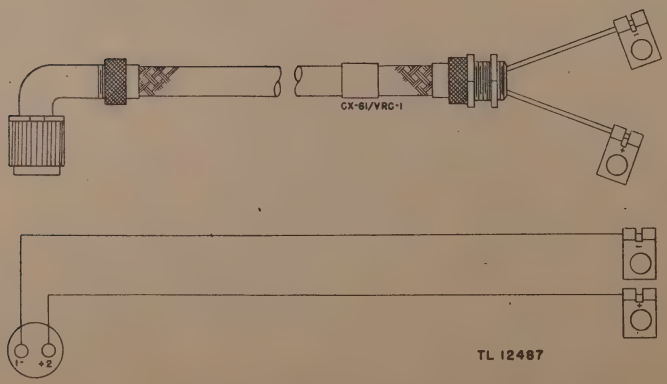


Figure 17. Cord CX-61/VRC-1.

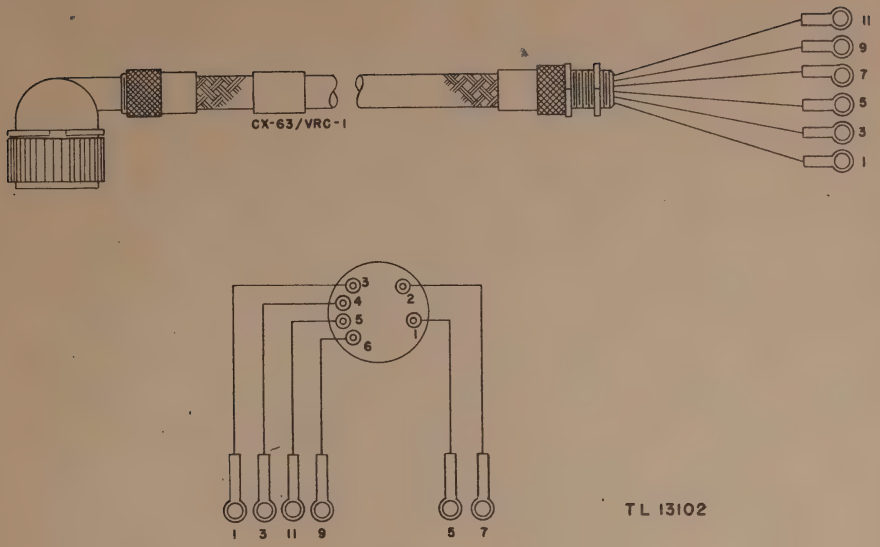
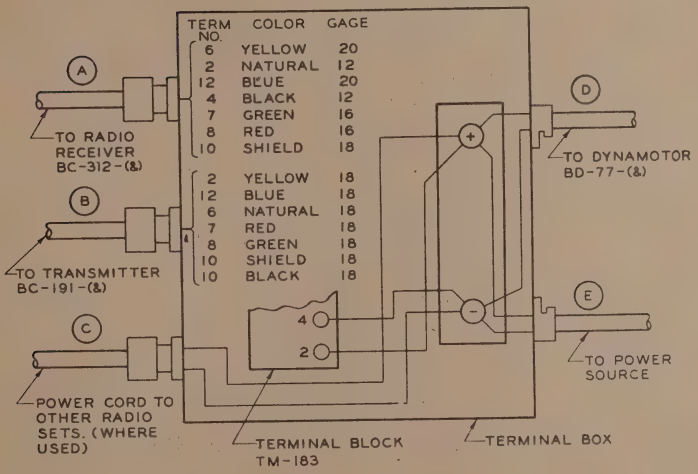


Figure 18. Cord CX-63/VRC-1.



NOTE:

1. WHEN USING JUNCTION BOX TM-188, TERMINALS #2 AND #4 SHALL BE CONNECTED TO POSITIVE (+) AND NEGATIVE (-) TERMINALS RESPECTIVELY IN THE VEHICLE TERMINAL BOX OR POWER SOURCE.
2. RADIO SET AN/VRC-1-(&), H.F. PORTION WIRING: (A) CORD CD-411; (B) CORD CD-358; (C) CORD CX-61/VRC-1; (D) CORD CO-165-A; (E) CORD CO-260-A.

TL-12442
BASED ON
SC-A-7307

Figure 19. Wiring diagram for Terminal Block TM-183.

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